

Watch Where You Point That Thing!



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A 16-year-old cheerleader¹ in Wisconsin twice had the beams of laser pointers aimed in her eye as a prank. The first time it happened, she said everything looked green. When the second momentary exposure occurred, she temporarily lost sight in her right eye.

In another incident, a laser pointer caused a serious bus accident, with multiple injuries. And in Florida, a man was arrested for scanning the ground near an off-duty police officer, who thought the man had a laser-sighted firearm.

All of these situations are examples of ignorance. Users need to know the hazards of laser pointers. To start with, “laser” is an acronym that stands for **L**ight **A**mplification by **S**tim-

ulated **E**missions of **R**adiation. It consists of five hazard classifications, which determine the extent of radiation-safety controls required (in normal laser operation only):

- Class I lasers, such as those used in CD and DVD players, are inherently safe for direct-beam viewing, with no biological health effects.
- Class II lasers, such as those used in printers, pointers, range finders, supermarket scanners, and laser-tag equipment², emit power up to one milliwatt³, which is about a million times more brilliant than a 100-watt light bulb.
- Class IIIa lasers, such as those used in printers, scanners, pointers, range finders, and the medical field, run from one to five milliwatts.
- Class IIIb lasers, such as those used in military range finders, target designators, printers, and the medical field, emit from five to 500 milliwatts.
- Class IV lasers, such as those used in target designators, range finders, industry, and experimentation, have a power output greater than 500 milliwatts.

Laser pointers within the Class II and IIIa ranges are the most popular. They won't cause permanent eye damage in short viewing

periods (blink reflex), but long-term viewing can cause flash blindness, glare and after-image effects that can last from seconds to days. Extended exposure can cause retinal burns from the increased power and heat generated on the retinal wall. Children especially are at a higher risk because their eyes aren't developed fully, and they aren't accustomed to such intense light.

Imagine a laser light projected through the optical lens of an overhead projector to a viewer's eyes. Such "reflected exposure" can cause temporary or permanent damage by burning a tiny spot on the retina or opening a small blood vessel on it.

Although new to the market, green laser pointers increase everyone's risk of eye injuries. The human eye is much more responsive to green light than red, which means these green beams are exceptionally bright.

By staying aware, asking questions, and applying common sense, the average user can protect against the problems posed by laser pointers. The standard regulatory body in the United States for manufacturers of any laser product is the Center for Devices and Radiological Health, a division of the Federal Food and Drug Administration.

The FDA issued a warning⁴ on laser pointers in 1997, stating these products generally are safe when used as intended. However, recent price reductions have led to wider marketing, and the FDA is concerned about efforts promoting these products as children's toys. The FDA requires laser pointers to have warning labels, which show their classification and tell users not to look directly into the beam.

One problem exists with this FDA requirement, though: It doesn't affect units imported into the United States. Those units may not have manufacturer certification or labeling attached. Your only safe avenue is to check for the FDA warning label before buying a laser pointer. Here are some other good rules to follow:

- Never stare at a laser light.
- Never shine a laser pointer at a person, animal or reflective surfaces, such as mirrors.
- Always purchase laser pointers with the output power, hazard classification, and warnings

about their potential eye hazard shown on the label.

- Buy laser pointers that turn off when pressure is removed.
- Keep laser pointers out of children's reach.

Some states have imposed specific restrictions on laser pointers. In Dearborn, Mich.⁵, for example, the mayor became concerned by reports of laser pointers being aimed in the eyes of police officers, motorists and pets. Police officers reported people in cars they stopped for traffic offenses were aiming laser pointers at them.

The biggest concern today is the popularity of these devices with children. By educating parents, teachers and society about the possible hazards, we can minimize the risks of laser pointers and keep using them as they were intended. A

For More Info

¹www.adpc.purdue.edu/PhysFac/rem/rs/laserpt.htm ("Laser Pointers, Helpful or Hazardous?")

²<http://lasertag.org/reports/special/safety.htm> ("Laser Pointers Raise Safety Questions in the Laser Tag Industry")

³www.hc-sc.gc.ca/english/iyh/products/laser.html ("Misuse of Laser Pointers")

⁴www.rli.com/resources/pointer.asp ("Safety Recommendations of Laser Pointers")

⁵www.usmayors.org/uscm/us_mayor_newspaper/documents/03_08_99/reserved.htm ("Laser Pointer Safety Ordinance Protects Rights, Promotes Public Safety")

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